Examiners Remarks:

1. Receipt of applicant's amendment filed 08/21/2006 is acknowledged.

Election/Restrictions:

2. Newly submitted claims 13-15 are directed to an invention that is independent or distinct from the invention originally claimed. The following inventions are now presented.

I. Claims 1-12, drawn to a heat reactor, classified in class 431, subclass 353.

II. Claims 13-15, drawn to a method of producing substantially pollution free gases, including spiraling of the feeds classified in class 431, subclass 9.

3. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the process can be practiced by a materially different apparatus, such as a heat reactor having a baffle that is positioned at some angle other than substantially perpendicularly in order to create a whirled mixture. Further, the apparatus can also be sued to practice another materially different process such as production of a combustion product for use as a motive fluid in operating a turbine engine.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 13-15 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

APPLICANTS REPLY:

With regard to the Election/Restriction above, the applicant hereby elects claims 1-12 drawn to a heat reactor, classified in class 431, subclass 353. Thus the Examiner is correct in prosecution on the merits of the original presentation. Accordingly, claims 13-15 are hereby withdrawn.

Examiners Remarks:

Specification

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Claim 5 recites that the flow conditioner is "coated" with a high resistant material. However, applicant's specification does not provide antecedent basis for this claimed coating of the flow conditioner.

Correction is required.

APPLICANTS REPLY:

With regard to the objection #4 above, the applicant contends that the Examiner is correct. Antecedent basis was not provided. Therefore, claim 5 has hereby been withdrawn accordingly.

Examiners Remarks:

Claim Rejections - 35 USC § 112

5. The prior rejections under 35 USC § 112 made to claims 5 and 9 are withdrawn.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims** 1-12 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,183,896 to Gordon ("Gordon") (previously cited).

Gordon discloses in the specification and Figs. 1-15 an invention in the same field of endeavor as applicant's invention and as described in applicant's claims 1-12. In particular, Gordon shows a heat reactor system comprising en elongated tubular housing having an inlet duct (146) for receiving injected fuel and air and an outlet duct (exit of 116) for expelling heated gases (see Fig. 10). The elongated tubular housing is portioned internally by at least one flow conditioner (148, 150, and/or 152) substantially perpendicularly positioned along the axis of the housing thus forming at least a first

combustion chamber (114) and at least one reactor compartment (compartment containing the flow conditioners).

In regard to claims 2-5, the embodiment of Figs. 1-8 of Gordon describes that the tubular housing (15) is made of steel, a heat resistant material, and the interior flow conditioner/discs (13) are made of ceramic, also a heat resistant material. These elements are considered to correspond to the housing (116) and discs (148, 150, 152) shown in the embodiment of Fig. 10 and suggest that these elements of Fig. 10 would also be made of steel and ceramic, respectively. Further, Gordon provides that both the housing (15) and discs (13) are further coated with porcelain, a heat resistant material, to provide strength and heat retention (see col. 3, lines 47-55). This is also considered to suggest a porcelain coating on the corresponding elements of the embodiment of Fig. 10.

In regard to claim 6, note the multiple reactor compartments formed by multiple flow conditioners (148, 150, 152).

In regard to claim 7, see Figs. 10, 14, and 15, and note that plates (148, 150, and 152) are formed as circular discs and multiple slits that are bent outwardly forming vanes which direct airflow in a controlled angular manner outwardly (see col. 7, lines 24-48).

In regard to claim 8, Fig. 10 shows that the plates (148, 150, and 152) are arranged in grooves within the housing 116). Further, as previously noted, the plates (148, 150, and 152) are considered to correspond to discs (13) of a prior embodiment of Gordon and expressly recited to be in grooves (29) that serve to orient the discs. These grooves are considered to be the multiple locating tabs recited.

In regard to claims 9, 10, and 12, the circular discs (148, 150, 152) are considered to include multiple cross bars in the same manner as recited by applicant (see at least Figs. 14 and 15). Also, Gordon provides that the fuel and air passing into the combustion chamber

are ignited by igniter (190) in order to release heat (see col. 8, lines 34-54). Further, the baffle plates (148, 150, 152) are arranged such that the openings in the plates are non-aligned in order to produce a diverted through there through (see col. 7, lines 42-45) that serves to increase the retention/dwell time of the gases in the combustion section (114). This diverted flow for increased retention time is considered to suggest the recited spiraling motion for increased dwell time as recited in applicant's claims. Lastly, the result is non-polluted (i.e. pollution free or virtually pollution free) exhaust fumes (see at least col. 1, lines 12-15).

In regard to claim 11, at least gas is disclosed as the fuel passed to combustion chamber (114) (see at least col. 8, lines 55-59).

APPLICANTS REPLY/ARGUMENTS:

Reconsideration of the above rejections is respectfully requested after consideration of the following remarks and arguments.

For reference **kindly note that newly amended claims 1, 8 & 10 as herein presented should overcome the Examiners rejections as they now more clearly define over the cited prior art**. Namely, claim 1 now incorporates original claims 1, 7 & 9. Whereby, the function of the flow conditioners is much more defined and their construction is completely totally different than the cited prior art. However, to further define over the prior art claim 1 as amended further includes "now free from harmful emissions including, hydrocarbons, carbon monoxide, odors, organic and inorganic particulates. Kindly note the antecedent for this addition is found on page 3, paragraph [0002] lines 3-4. Also claim 10 incorporates claims 1, 7, 9 & 10, the above noted addition and still further defines function, construction and purpose of the invention.

The applicant contends that the cited reference, namely "Gordon" U.S. Patent #4,183,896 is somewhat similar to the instant invention as it substantially pertains to an anti-pollution device. However, **the applicant strongly disagrees that the reference can be used for production of pollution-free intense heat that can be used for energy purposes** in an environmentally friendly manner. **In fact the reference itself teaches away from this,** as it is much more concerned with "cooling" the treated exhaust gases before being exhausted. **Gordon clearly states throughout the claims that the invention is a three-stage system.** Namely, Gordon specifies **a first stage** wherein exhaust gases (from an internal combustion engine) are accelerated within a converging cone structure. **An intermediate stage** having a plurality of flow diverter elements for the passage and expansive flow of the exhaust gases there through and **a third stage** for the reception and **cooling of exhaust gases**. This is completely opposite of the present invention as it is a most important object of the "instant heat reactor" to produce intense heat that can be used for numerous energy purposes. Nowhere in the cited reference do they recognize, suggest or address the numerous advantages associated with using the heated exhaust gases for energy! **This is the most important novel intention as clearly defined throughout the entire application and claims of the present invention**.

More importantly, it is unclear as to why the Examiner considers that the '896 reference would or even could be functional with only one elongated tubular housing. Clearly throughout the **specification and claims of Gordon the system requires a cylindrical chamber having therein a cylindrical outer shell and an inner shell with insulation there between with a three-stage system constructed internally along the length of the chamber**. Kindly note, this is clearly stated within the Abstract lines 3-4 and

throughout the claims. The Examiner expressly states that in figure 10 the system is only an elongated housing. However, as depicted therein and throughout the views the internal cylindrical cooling section 116 is contained within the cylindrical outer housing 102. Nowhere does the reference suggest that the system would be fully functional as one elongated cylindrical housing as clearly taught by the present invention. Being this is not addressed, recognized or even suggested this implies that clearly the present invention is not obvious. **More importantly even if the cited reference were functional as one elongated housing it is much too complicated and includes numerous parts and accessories that the present invention clearly eliminates**. Namely, a converging cone-structure, an inner shell, insulation between the outer and inner shells, an initial ceramic disc, a series of subsequent ceramic discs, four check valves and numerous interconnecting parts. Therefore the present invention has been made simpler **having no moving parts** without loss of capability. For example, **Gordon would not function for its intended use as an anti-pollution device that also cools the exhausted gases without all the additional components.**

With further reference to figure 10, Gordon also includes four check valves (170) and each check valve includes a through orifice (174) in the outer housing and a reed flap (176). Whereby gas flow through the venturi tube section (114) of the inner conduit (108) causes the flaps (176) to swing away from orifices (174) and admit controlled amounts of air into the annular space (145). This is all described in detail within Col. 7, last paragraph. The present invention has no moving parts.

With regard to the construction of the baffle plates of Gordon it is contended that they are totally different and do not provide the desired end results achieved by the present

invention. If the Examiner will kindly note, within figure 14 it clearly states a plan view for a baffle plate and figure 15 is a detailed plan view of the baffle plate of figure 14. More specifically, as stated by Gordon within Col. 7, the entire 3rd paragraph: "Referring now to FIGS. 14 and 15 the baffle plates preferably are fabricated from a corrosion and heat resistant metal such as stainless steel. Each plate is identical in construction and with specific reference to plate 148 **each has a circular outer peripheral configuration and a cut out middle portion 154. The cut out middle portion 154 of the plates has an irregular peripheral configuration with a generally circular center portion 158 and eight through slots 156 spaced around the periphery of the center portion 158 extending radially out from the center portion 158.** As shown in FIGS. 10 and 15 the plate wall portion between adjacent slots 56 are bent axially away from the plane of the front and rear surfaces of the plates. **These bent wall portions are designated 156. The baffle plates 148, 150 and 152 are mounted in the cooling section 116 of the inner conduit 108** such that the bent wall portions 156 are bent away from the plates in the direction of flow of the exhaust gases. **In the arrangement each successive baffle plate has the slots non-aligned whereby gases passing there through are diverted**. As will hereinafter be explained the irregular cut out opening 158 and bent wall portion 156 of the baffle plates 148, 150 and 152 function to induce flow of the exhaust gases and increase the retention time of the gases in the combustion section 114."

Therefore, Gordon **teaches multiple baffle plates each having a central opening** and the plates **in combination** divert the gases. Thus, Gordon must use more than one plate to divert the gases while the present flow conditioner due to its configuration is functional in itself and multiples are not required. However, multiples can be incorporated for variable

needs depending on the specific application on hand. ***The most important feature of the present flow conditioner is that it does not allow gases to escape through a central area of the flow conditioner, as there is no central opening!! This is now more clearly defined within the newly amended claims. More importantly, the arrangement of the baffle plates of Gordon must be specifically non-aligned. Whereby, the gases passing there through are diverted into the next baffle plate and not into the slots of the next baffle plate. This is completely opposite of the flow conditioners of the present invention as each of the flow conditioners need not be aligned in a specific pattern as required by Gordon. Thus each of the flow conditioners can be easily installed without the need to specifically align each one independently and this is most advantageous.***

Still further, it is contended that the locating tabs of the present invention are very different than grooves. **Nowhere does Gordon suggest that the baffle plates have any tabs. Because of these tabs there is no need to modify the housing as clearly taught within Gordon.** Reconsideration of the rejection is respectfully requested.

More importantly the overall operation of Gordon is completely different than that of the present invention. For example, in operation, the exhaust tail pipe of an automotive vehicle (not shown) is cut in a conventional way as near the exhaust manifold of the automotive vehicle as possible, with the tailpipe also being cut a distance rearwardly from the exhaust manifold to provide the desired length of opening in the tailpipe to accomodate the length of the anti-pollution device 10. The cut end of the tailpipe nearest the exhaust manifold is connected to the pipe 52 on reduction pipe 50 in a conventional way, such as by welding, interconnecting clamps, or the like, and the cut end of the tailpipe furthermost from the exhaust manifold is connected in the same way to the pipe

59 provided on the flange 55. When the automotive vehicle is running, the exhaust fumes are then discharged from the exhaust manifold into the tailpipe and then into the opening 34 in the spiral cone 12 where the exhaust fumes are first expanded due to the larger size opening near the front surface 32 and are then agitated by means of the ribs 35 through the smaller opening 34 near the rear surface 33, this representing **the first stage** of the anti-pollution device 10. The exhaust fumes are then propelled through the series of discs 13 and 14, and with the discs 13 and 14 being of ceramic porcelain coated material so as to be of a highly heat conducting property, the discs 13 and 14 become extremely hot after an automotive vehicle has run for a short time, so that, as the exhaust fumes are propelled through the series of discs, the foreign or polluted materials remaining in the exhaust fumes after discharge from the exhaust manifold are thereby burned up. The slots 39 in the initial ceramic disc 13 and the slots 43 in the subsequent disc 14 provide not only for expansion and contraction of the respective discs 13 and 14, but also for additional surface area for the exhaust fumes to expand into to provide exposure of the exhaust fumes to more heated surface area and to thereby effectively burn up the pollutant materials therein. The ceramic discs 13 and 14 represent **the second stage** of the anti-pollution device 10 from whence the exhaust fumes are propelled through **the third stage**, namely through the interior compartment 48 in the cooling pipe 15 where the exhaust fumes are reduced in temperature or cooled for emission through the round through hole 58 in the flange 55 and out the automotive tailpipe into the atmosphere.

To further overcome the noted prior art, kindly note original claim 9 has been incorporated into newly amended claim 1. Wherein, amended claim 1 now eliminates "pollution free hot gases and/or air" and claims "said intense heat "that now free from

harmful emissions including, hydrocarbons, carbon monoxide, odors, organic and inorganic particulates is expelled from within said elongated tubular housing via said outlet duct and can be used for energy purposes in an environmentally friendly manner." See the last 5 lines of newly amended claim 1 for reference.

Still more importantly the system of Gordon would not work without the insulation, namely, sodium. This is extremely important, as Gordon would not work without it. Unfortunately, this is a real disadvantage for Gordon as this is extremely dangerous.

From Wikipedia, the free encyclopedia

Precautions

Extreme care is required in handling elemental/metallic sodium. Sodium is potentially explosive in water (depending on quantity) and is a caustic poison, since it is rapidly converted to sodium hydroxide on contact with moisture. The powdered form may combust spontaneously in air or oxygen. Sodium must be stored either in an inert (oxygen and moisture free) atmosphere (such as nitrogen or argon), or under a liquid hydrocarbon such as **mineral oil** or **kerosene**.

The reaction of sodium and water is a familiar one in chemistry labs, and is reasonably safe if amounts of sodium smaller than a pencil eraser are used and the reaction is done behind a plastic shield by people wearing eye protection. However, the sodium-water reaction does not scale up well, and is treacherous when larger amounts of sodium are used. Larger pieces of sodium melt under the heat of the reaction, and the molten ball of metal is buoyed up by hydrogen and may appear to be stably reacting with water, until splashing covers more of the reaction mass, causing thermal runaway and an explosion which scatters molten sodium metal, lye solution, and sometimes flame. This behavior is unpredictable, and among the alkali metals it is usually sodium which invites this surprise phenomenon, because lithium is not reactive enough to do it, and potassium is so reactive that chemistry students are not tempted to try the reaction with larger potassium pieces.

Sodium is much more reactive than magnesium. When the metal itself catches fire (as opposed to just the hydrogen gas generated from it) it burns at high temperatures and also melts, which spreads the flame and exposes even more surface area to the air.

Few common fire extinguishers work on sodium fires. Water, of course, exacerbates sodium fires, as do water-based foams. CO_2 and Halon are often ineffective on sodium fires, which reignite when the extinguisher dissipates. Among the very few materials effective on a sodium metal fire are Pyromet and Met-L-X. Pyromet is a $NaCl/(NH_4)_2HPO_4$ mix, with flow/anti-clump agents. It smothers the fire, drains away heat, and melts to form an impermeable crust. This is the standard dry-powder canister fire extinguisher for all classes of fires. Met-L-X is mostly sodium chloride, NaCl, with approximately 5% Saran plastic as a crust-former, and flow/anti-clumping agents. It is most commonly hand-applied, with a scoop. Other extreme fire extinguishing materials

include **Lith-X**, a graphite based dry powder with an organophosphate flame retardant; and **Na-X**, a Na_2CO_3-based material.

Because of the reaction scale problems discussed above, disposing of large quantities of sodium (more than 10 to 100 grams) must be done through a licensed hazardous materials disposer. Smaller quantities may be broken up and neutralized carefully with **ethanol** (which has a much slower reaction than water), or even **methanol** (where the reaction is more rapid than ethanol's but still less than in water), but care should nevertheless be taken, as the caustic products from the ethanol or methanol reaction are just as hazardous to eyes and skin as those from water. After the alcohol reaction appears complete, and all pieces of reaction debris have been broken up or dissolved, a mixture of alcohol and water, then pure water, may then be carefully used for a final cleaning. This should be allowed to stand a few minutes until the reaction products are diluted more thoroughly and flushed down the drain. The purpose of the final water soak and wash of any reaction mass which may contain sodium is to ensure that alcohol does not carry unreacted sodium into the sink trap, where a water reaction may generate hydrogen in the trap space which can then be potentially ignited, causing a confined sink trap explosion.

In view of the above, if the Examiner agrees but does not feel that the present claims are technically adequate and/or if the Examiner (knowing that the applicant is not a skilled Attorney but is applying as a private citizen) can see areas which applicant has failed to point out and distinctly claim but would lead to patentable material, then I respectfully request the Examiner to point out said material and to write acceptable claims pursuant to MPEP 707.07(j) and give the applicant an opportunity to respond further before final action.

CONCLUSION

For all the reasons above, this application is now submitted to contain claims that define a novel and patentable invention. Hence allowance of the application is respectfully submitted to be proper and is respectfully solicited.

Very respectfully,

Ronald E. Loving